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Pododermatitis in Danish broiler farms 2002-2008

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Hyperkeratosis and ulcers on foot-pads is a major welfare problem in broiler production. The problem is associated with ammonia irritation due to poor and wet litter quality. Since 2002 Danish producers have been subject to the Act on Welfare in Broilers and Parent Stock. After slaughter the veterinary inspection scores a random sample of 100 birds from each flock with regard to foot-pad lesions. The individual scores are: no lesions=0, superficial lesions=1, deeper lesions=2. These scores are summed for the flock leading to a flock lesion score between 0 and 200. A flock lesion score below 40 is considered acceptable. If the score is between 40 and 80 the farmer and his veterinarian are notified and if the total lesion score is above 80 the veterinary authorities are informed as well. The introduction of the program has led to several initiatives among the producers to improve litter quality. Focus is on heating of the houses after cleaning, type of bedding material, ventilation and control of water spillage. We merged data from the ante-mortem inspection, meat inspection data and the farms' efficacy monitoring on basis of farm-id, house-number and the yearly rotation number resulting in a total of 28400 observations. By plotting these data, a curvilinear development in the flocks lesion scores was observed: In the period 2002-2005 there was a rapid decline in flock lesion scores (the mean and standard deviation of the flock score was 89.0 ± 47.6 in 2002 and 46.6 ± 35.1 in 2005) whereas the development was less pronounced in the period 2005-2008 (the mean flock score was 41.3 ± 35.1 in 2008). The statistical analysis was carried out on the data from 2004 to 2008 as some variables were included only from 2004. A mixed-effect variance model was formulated with the square-root-transformed flock lesions scores as the response variable. The farm-id was set as a random effect. Statistically significant explanatory variables included: bedding material (lower scores on wood shavings than on straw), season (lower scores in summer than in winter) and growth rate (higher growth rates were associated with lower scores). Higher stocking densities led to slightly higher lesion scores in summer but to slightly lower scores in winter. The reason could be a beneficial effect of higher heat production on the bedding quality in the winter months. In the period from 2004 there was a strong shift in bedding material from 'straw' to 'wood shavings'. The flock lesion scores were stable in the 'wood shavings' flocks, whereas the scores declined for other bedding materials (mostly straw) whereby they approached the levels for wood shavings. In conclusion, the efforts have led to an impressive decline in flock lesion scores in the years 2002-2005, followed by more stable levels in the period 2005-2008. Higher lesion scores were statistically associated with straw as bedding material, low growth rates and winter season.